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Reply to:

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April 12, 2002

Robert Pernell, Commissioner
Presiding Member, Energy Efficiency Committee
California Energy Commission
1516 Ninth Street, MS 33
Sacramento, CA 95814

In The Matter Of:

REVIEW OF CONCERNS RAISED BY TYCO ADHESIVES
ON BUILDING ENERGY EFFICIENCY STANDARDS
REQUIREMENTS FOR CLOTH BACK RUBBER ADHESIVE DUCT TAPE
http://www.energy.ca.gov/title24/ducttape/documents/public_comments/04-05-02_STANZLER_LETTER.PDF

Dear Sir:

As a follow up to the March 21 hearing of your committee, Mr. William Funderburk on behalf of Tyco Adhesives submitted a letter addressed to Mr. William Pennington dated April 4, 2002, which mentioned directly and indirectly research from the Lawrence Berkeley National Laboratory. We would like to address comments of Tyco Adhesives related to our work.

My name is Max Sherman. I am a Staff Senior Scientist, Ph.D. and Group Leader at the Lawrence Berkeley National Laboratory. I am and have been the Principal Investigator for work on residential thermal distribution systems at LBNL and specifically for the sealant longevity work of concern to TYCO adhesives. For further background please refer to the information we supplied in June and December 2001 for the docket.

For the past few months, LBNL has been working under contract from the Commission to undertake research to help answer the questions raised last June about cloth-backed, rubber-adhesive tapes. We have been working closely with the

Commission and Tyco to conduct testing to address issues raised by the industry and others.

One of the specific industry objections, reiterated in the April 4 letter, focuses on the testing protocol we used to generate our primary result. The details have been presented to the Commission before; the protocol is progressing towards acceptance as an ASTM Test Method; and it has passed several peer reviews in being published in the archival literature. We continue to believe that it is a reliable predictor of sealant longevity performance.

Many in the industry do not believe that performance in one configuration is a good predictor in other configurations and have asked for tests to be done in the round-to-round configuration typical of the core-to-collar joint that was the topic of the express terms. With agreement from the CEC and Tyco, we began testing February 1, 2002 eighteen core-to-collar joints with different combinations of tapes, taping styles and clamping.

The claim of the April 4 letter that no failures have been reported could lead readers to the wrong conclusion, so I would like to provide more detail. To be clear, LBNL has made no official report on the experiment. In an effort to be responsive to the immediate needs of the Commission, however, we have shared our preliminary data for the purposes of your hearing, which is not our normal practice.

Furthermore, to get the equivalent of 30 years of use using the industry preferred testing protocol, we must run the experiment for approximately two years. We believe that if visual inspection is used rather than measured leakage, this time could be cut to about six months. While it is true that there have not yet been any significant failures from the point of view of leakage, we are seeing clear visual degradation of some of the configurations. We presented a picture of one such failure at the March 21 hearing.

Although the degradation we are beginning to see in the current experiment supports the pattern of failure predicted by our earlier tests, we need more than a couple of months to draw reliable conclusions. We expect to have an official report out this fall to address the visual degradation of core-to-collar configurations.

As stated in the April 4 letter, Tyco is developing a test it hopes will quantitatively predict the longevity of duct tapes. By inference it may appear that we have approved this method, but that is not quite so. Tyco has shared with us their approach. There is a lot of merit in their approach and we support them going forward with it; we intend to help them do so. We do, however, have concerns about various technical details of the test method and would need other kinds of substantiating information before we could make an informed judgment. We do believe that a test of the kind proposed by Tyco would make it quite easy to qualify the longevity of tape products and thus would be of future benefit to both the industry and the Commission, if it can be made to work.

We have begun testing the new product mentioned in the April 4 letter. With the agreement of Tyco and the Commission, we are testing it with a version of our original collar-to-plenum joint in order to get quicker feedback and to compare it to the other sealants we have tested. Because of its unique construction, we are optimistic about its performance, but we do not as yet have any definitive results.

Tyco raised fairness issues about 30 year lifetimes for duct tapes. Although LBNL testing has not made such lifetime predictions, we believe that the goal stated by the commission to generally have static components of the house last for 30 years is a good one. Our understanding of what was stated at the workshops on this issue may, however, be different from Tyco's. We believe that that was a goal not a requirement. That is, there should be a reasonable expectation of the duct system lasting 30 years of

normal use. That is very different from a manufacturer or builder having to warrantee something for 30 years.

For example, flexduct often has a warranty of 15 years. That does not necessarily mean that its expected life is 15 years. Chico State University recently did a study of over 100 houses with flexduct that was from 5 to 25 years old and found less than 2% failure. Most failures appeared to be related to some sort of accident rather than simple degradation, so the material appeared to be exceeding the warranty. Flexduct has not been in popular usage for 30 years yet, but based on the existing data there is no reason to believe that a 30-year life is an unreasonable expectation for that material. (I would, nevertheless, encourage the Commission to investigate the issue further.)

There is, also, no reason to believe that many of the duct *sealants* would not last 30 years. There is, however, reason to believe that the traditional cloth-backed, rubber adhesive duct tapes will not last 30 years.

LBNL is continuing to test duct sealants and will provide information as requested by the Commission. Please let us know if we can provide anything regarding this matter before you.

Sincerely,

A handwritten signature in black ink, appearing to read "M H Sherman". The signature is fluid and cursive, with the first and last names being more prominent.

Max H. Sherman, Group Leader, Energy Performance of Buildings Group, LBNL

cc: Arthur H. Rosenfeld, Commissioner
Second Member, Energy Efficiency Committee
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